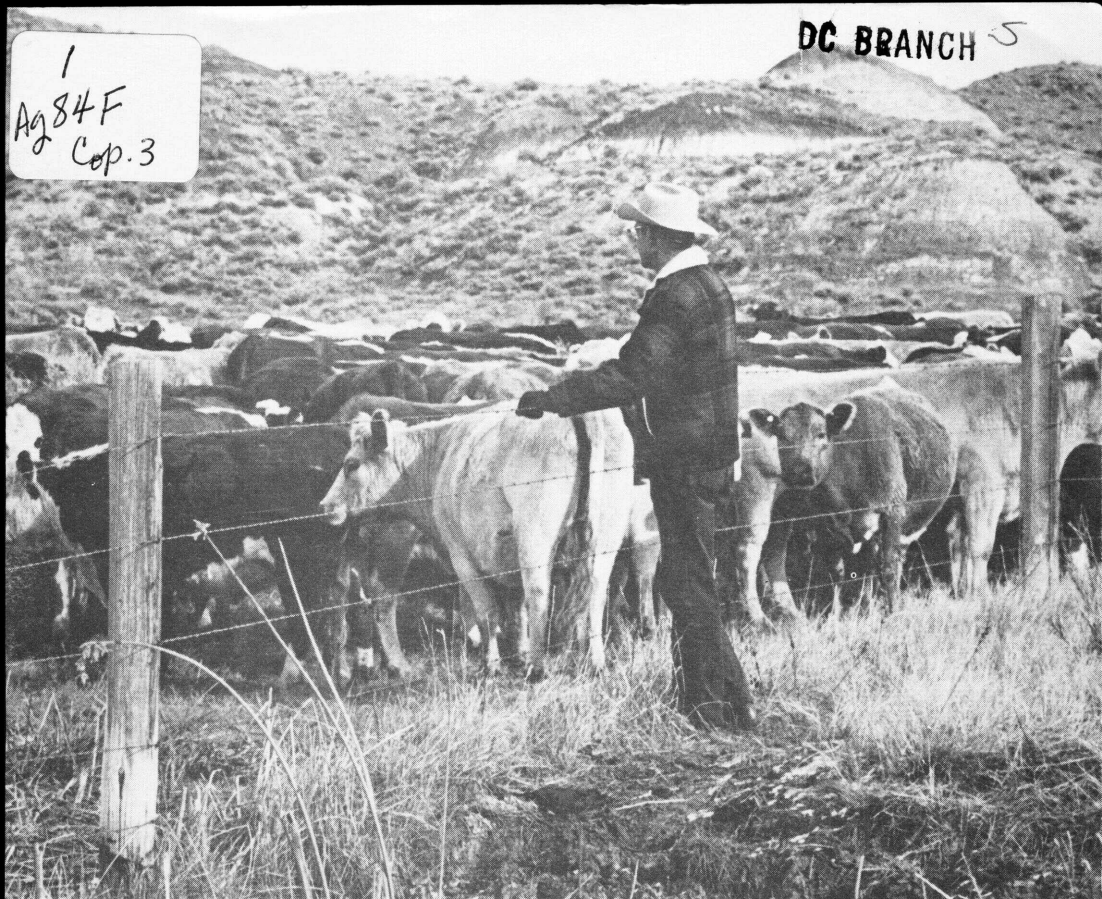


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U.S. DEPARTMENT OF AGRICULTURE FARMERS' BULLETIN NO. 2228

Beef Cattle Breeds

ACQUISITION SECTION
CURRENT SERIAL RECORDS

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CONTENTS

	Page
Selecting beef cattle breeds	1
Key points in breed selection	2
Choosing a breed	2
Development of beef cattle breeds	3
Breeds developed in the British Isles and	
Continental Europe	3
Angus	3
Red Angus	5
Charolais	7
Chianina	8
Devon	8
Galloway	9
Gelbvieh	10
Hereford	10
Polled Hereford	11
Limousin	12
Maine Anjou	12
Murray Grey	14
Scotch Highland	14
Shorthorn	16
Polled Shorthorn	17
Simmental	17
South Devon	18
Breeds developed in North America	20
Barzona	20
Beefmaster	21
Braford	22
Brahman	23
Brangus	24
Red Brangus	24
Charbray	25
Hays Converter	27
Santa Gertrudis	27
Dual-purpose and dairy breeds of cattle	28
Milking Shorthorn	29
Red Poll	29
Brown Swiss	31
Holstein-Friesian	32
Cattle Record Associations	33

BEEF CATTLE BREEDS

Prepared by P. A. Putnam, Northeastern Region, and E. J. Warwick, National Program Staff, Agricultural Research Service, Beltsville, Maryland.

SELECTING BEEF CATTLE BREEDS

The long-range success of a beef herd depends more on the genetic procedures and breeding practices followed by cattlemen than on the breed they select.

Unfortunately records are not available on productivity and carcass quality of representative cross sections of beef breeds. This makes it difficult to predict how most breeds will perform either as straightbreeds or in crosses with other breeds.

However, some tentative and general appraisals can be made, based on records from four types of programs:

1. Beef performance testing programs started in the 1950's by about 35 State Extension Services. These programs, often in cooperation with State breed organizations, are continuing.

2. Production records of beef cattle accumulated by Performance Registry International, an organization founded in 1955.

3. Performance and carcass evaluation programs conducted by most breed associations to aid their members in selecting superior cattle.

4. Numerous research programs conducted at State and Federal Experiment Stations.

Although it is impossible to determine whether cattle in these programs are representative of the breeds, the records appear to show that:

- Breed differences in pre- and post-weaning gain are relatively small among the three British breeds—Angus, Hereford, and Shorthorn—and the polled types of the latter two.

- Some of the Continental-European breeds and the new breeds based on Brahman-European crossbred foundations grow faster, both before and after weaning, than the British breeds. (The same is true of crosses of these breeds with British breeds.)

- If breed differences exist in efficiency of growth (feed consumed per unit of gain), they have not been established. Similarly, breed differences in fertility and longevity have not been clearly defined in most cases.

- Among the British breeds, differences in meat palatability and tenderness are small.

- Some of the Continental-European breeds and their crosses, the Brahman and its crosses, and new breeds based on Brahman-European crosses produce carcasses with less external fat and higher

yields of trimmed preferred retail cuts than British breeds. As compared to British types slaughtered at the same weights, these crosses ordinarily do not have as much marbling and do not grade as high by USDA quality grade standards.

- Brahman cattle and breeds based on Brahman-European foundations have greater heat tolerance than European types and greater resistance to many insects and some diseases. As compared to British types, animals of these breeds are slower to reach sexual maturity, but brood cows are excellent mothers and have longer productive lives. The lean meat from the Brahman, and from breeds with part Brahman foundations, has been found in several experiments to be somewhat less tender than that of British breeds.

Some beef breeds are horned and some polled (hornless). Mutations (genetic changes) have occurred in certain animals of several horned breeds, causing them and their descendants to be polled. In some cases breeders developed these polled strains and established separate breeds. It is a moot question whether these types are truly different breeds, but for convenience they are discussed separately in this bulletin.

Selection of a polled or horned breed or type normally should be determined by personal preference. No objective information is available on comparative productivity of the two types. Horned animals, once dehorned, are then physically comparable to naturally polled ones.

Polled or dehorned cattle feed together more quietly and need less space than horned cattle. There is also less danger of carcass damage to animals during shipment to market. For these

reasons horned cattle destined for feedlot finishing should always be dehorned. Under most farming and many range conditions, hornless breeding cows are considered easier to handle. Heifers destined for use as brood cows generally should be dehorned.

Breeders choosing to raise horned animals frequently use weights on the horns of young animals. These weights train and shape the horns into more pleasing contours that eliminate some of the hazards associated with untrained horns.

Key Points in Breed Selection

Available information indicates:

1. All breeds have both strong and weak points.
2. No one breed is best for all important characteristics under all conditions.
3. Much hereditary variation exists in all breeds. Therefore, initial selection of superior animals and further improvement of the herd through use of good breeding practices are fully as important as deciding which breed to use.

Choosing a Breed

Consideration of the following will aid in making an objective choice of breed:

1. Survey the area to see what breed or breeds are the most productive in environments similar to that in which your herd will be kept.
2. Study market demand for animals of different breeds. Relate this to probable productivity in determining the breed likely to be most profitable. This is important whether one produces breeding animals, feeders, or finished slaughter stock.

3. Compare the advantages of a breed or breeds already produced in large numbers in your area with those of breeds having apparent usefulness, but not currently raised extensively, in the same area.

Foundation animals should be obtained from the best stocks available at prices compatible with the type of production planned. Breeding practices should be followed that will improve the herd genetically.

DEVELOPMENT OF BEEF CATTLE BREEDS

The development of modern-day beef breeds began in the late 1700's in Europe, especially in the British Isles.

Farmers in an area selected cattle of a kind they considered best for the locality. They continued to grow them consistently over a period of years, and these selections often resulted in the formation of a breed. Some breeds resulted from crosses of existing breeds—others from crosses of cattle that had not attained breed status.

The most desirable animals tended to be gathered into a few herds that were bred by introducing little or no other stock. As they gained popularity, numbers increased and eventually a breed society was formed. In this way, highly useful and efficient kinds of animals were developed that survived as breeds.

Breed formation has been somewhat different in the United States in the 20th century. The Brahman was formed

by the amalgamation of several Zebu breeds or strains from India. In other cases, breeders identified crossbred types, either from their own experience or from experiment station results, that had desired combinations of traits not found in existing breeds. The crossbreds were then intermated and the offspring selected for desired performance traits, as well as for color and horn type in some cases.

The following table shows beef cattle registrations by 5-year intervals since 1910. These registration numbers are not perfectly related to commercial importance of the respective breeds, but they are the best indicators available. Some breeds register a higher proportion of females than other breeds. The percentage of purebred but unregistered bulls sold to commercial producers probably varies among breeds, too.

BREEDS DEVELOPED IN THE BRITISH ISLES AND CONTINENTAL EUROPE

Angus

Characteristics of Angus cattle:

- Black, smooth-hair coat.
- Polled.
- Generally alert and vigorous.
- Well-marbled beef.

The Angus breed originated in Scot-

land from the black, polled cattle native to Aberdeen and Angus shires. The breed developed in a rigorous climate, and on rolling to rough land, which is not particularly fertile except in the valleys.

A retired London silk merchant, then living in Victoria, Kans., imported the

Table 1.--*American Cattle Registrations (thous.)*

Breed	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970
Hereford	24	44	97	75	96	117	181	275	383	422	364	302	236
Polled Hereford		2	6	4	6	6	10	28	44	101	111	160	160
Angus	10	16	23	11	11	15	32	56	110	186	236	384	352
Shorthorn	29	58	106	69	49	25	23	30	37	35	38	38	35
Brahman	--	--	--	2	2	2	4	10	19	17	13	16	18
Red Poll	3	4	6	3	3	1	2	4	5	3	2	2	2
Milking Shorthorn	--	--	--	--	--	10	15	24	29	22	10	6	5
Brown Swiss ¹									22	22	24	18	16
Holstein ¹									184	198	266	257	309
Santa Gertrudis											7	12	19
Charolais											8	8	45
Red Angus											1	2	5
Polled Shorthorn						3	4	8	12	14	11	11	12
Brangus									4	6	4	4	7

¹Not listed prior to 1950 since use for beef as a straightbred or for crossing was slight until recently.



Angus.

PN-3453

first four Angus bulls into the United States in 1883 and crossed them with native Texas Longhorn cattle. The bulls adapted themselves well to range conditions and produced superior calves. More cattle were soon imported from Scotland.

For many years the breed was considered best adapted to farming areas. Its popularity has increased greatly in the range areas, however, and today the breed is found in every State and in Canada. If Herefords and Polled Herefords are considered as separate breeds, the Angus has led all other breeds in total annual registrations since 1963.

Angus cattle have an enviable record in the feedlot and as fat slaughter cattle because they mature early and produce carcasses of high-quality, well-marbled meat.

All, or nearly all, animals of the breed are pure for the dominant, polled gene. Thus, in crosses with horned breeds of European origin or type, the crossbred calves are nearly always polled.

Horn inheritance is more complicated in crosses with the Brahman. In Angus crosses with this breed, 95 percent or more of the heifer calves are polled; one-half to three-fourths of the bull calves will have some horn or scur.

More than 95 percent of Angus cattle are pure for a gene for black body color. In crosses with red-bodied breeds the offspring are black but may have white markings characteristic of the other breed. In crosses with white Shorthorns, so-called blue-grays are often produced with a mixture of white and black hair.

Calves produced from Angus crosses with Charolais (cream colored or creamy white) are usually dark or "smokey" white. Thus, the black of the Angus is only partially dominant in this cross.

Red Angus

Red is inherited as a simple one-gene recessive in Angus cattle. Individual red cattle have occurred in the breed since its earliest development. This shows that



BN-30651

Red Angus.

the gene for red is present at low frequency in the breed. Although black has been the favored color since the founding of the breed, reds can be registered in the Angus herdbook in Scotland. Prior to 1917 they were also accepted for registry by the American Angus Association.

Because red is a recessive gene, the offspring of red X red matings are always red. Since about 1945 some breeders have taken advantage of this fact to establish true-breeding Red Angus herds. Breeders formed an association — the Red Angus Association of America, in Fort Worth, Tex., in 1954.

Except for color, the foundation animals of the breed were similar to black animals of the parent black breed. Red color absorbs less of the sun's heat, which may be an advantage in hotter climates. The degree to which the Red Angus breed remains like the parent breed in features other than color will depend on future selection standards within the two breeds.

The Red Angus Association requires performance information and inspection for registry. An open herdbook is maintained as well as a program of certification for F-1 females.

Charolais

Characteristics of Charolais cattle:

- White or very light straw-color coat.
- Mature purebred bull weight—2,000 to more than 2,500 pounds.
- Mature cow weight—1,250 to 1,600 pounds, or more.
- High rate and efficiency of growth.
- High percentage of lean meat with a minimum of excess fat at a young age.

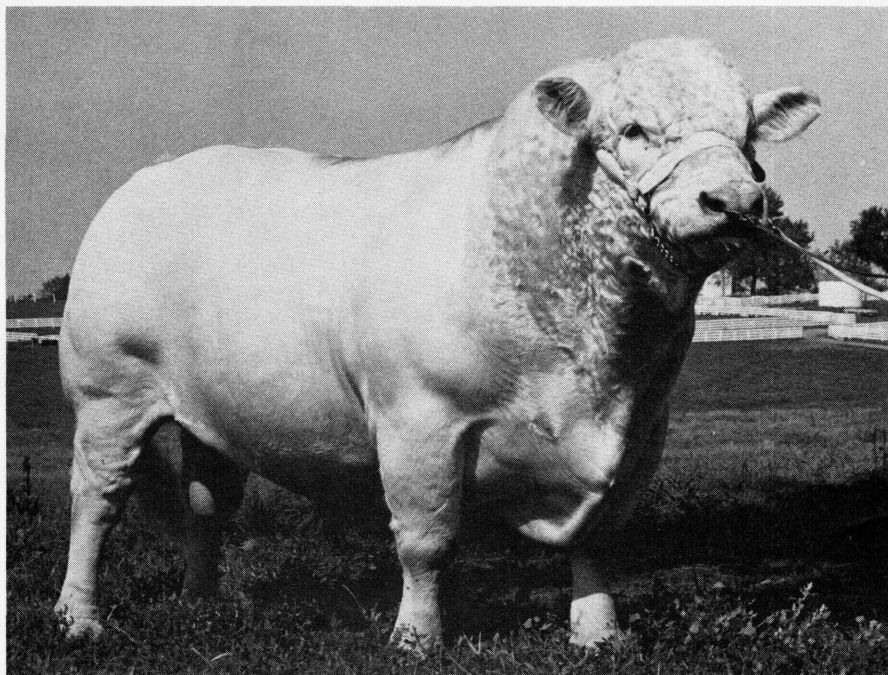
Charolais, a French breed, have been adapted to the North American continent, as well as many other countries throughout the world. In addition to its great adaptability, Charolais also crosses well with other cattle breeds producing hybrid progeny which can meet the needs of the diverse commercial beef cattle industry. Numbers are currently

being increased through topcrossing on other breeds.

In France, Charolais is one of the most important beef cattle breeds. This breed first arrived in the United States from Mexico in 1936. Charolais was again imported in May, 1966. This stock was obtained from Canada imports.

In addition to these imports, Charolais semen was obtained at USDA's foreign animal disease testing facility at Plum Island, N.Y. Both of these sources were used to genetically strengthen existing U.S. stock. Since 1966, the United States has imported this breed from Canada, the Bahama Islands, England, Ireland, and Japan.

The American-International Charolais Association maintains an open herd-book and registers purebred Charolais following five topcrosses.



BN-30652

Charolais.

Chianina

Characteristics of Chianina cattle:

- Mature bulls stand 6 feet at the withers and weigh up to 4,000 pounds; females stand about 5 feet at the withers and weigh up to 2,400 pounds.

- Porcelain-white hair, black tongue and palate, black nose and eye area, black switch and anal orifice. Skin Black except for underline.

- High heat tolerance.

- Selected for a gentle and amiable disposition.

- Quite pure genetically and very uniform in appearance.

The Chianina breed originated in the Chianina valley in the province of Tuscany around the time of the Roman Empire. Chianina remains the principal breed for work and beef production in Italy. Semen of this breed was first imported by the United States in April, 1971.

Calves are born with tan hair that gradually turns white during 60 days following birth. White hair is usually recessive for the first cross with other breeds, but not the pigmentation. The average weight of males at birth is 100 pounds; females weigh somewhat less. The fine heads and long, narrow bodies of the calves are claimed to offset possible calving difficulties. Their crossing potential with the large dairy breeds has been clearly established in Italy.

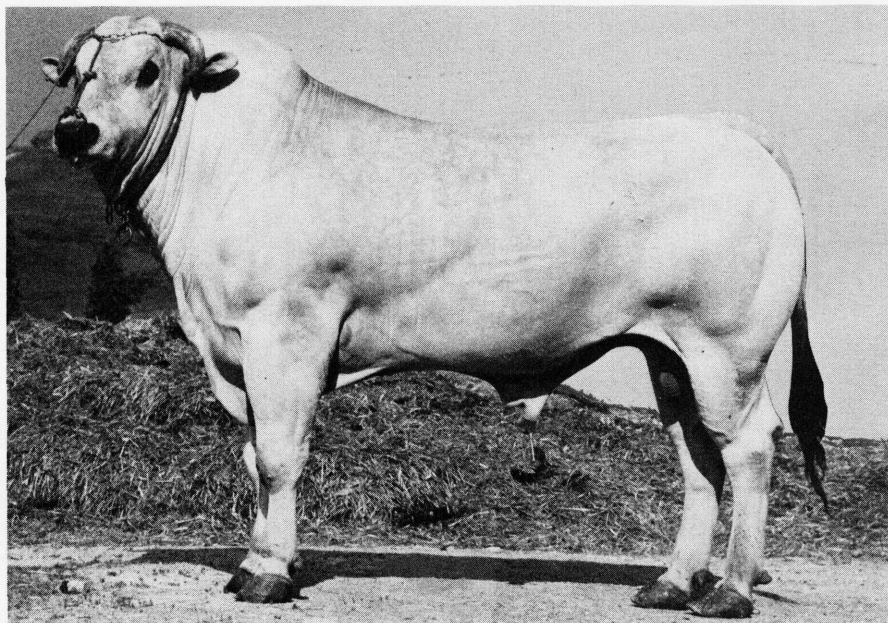
Bulls may be fed out for market at 12 to 14 months averaging 1,200 pounds live weight. Physiologically, such animals are immature and would be expected to have little fat cover.

Devon

Characteristics of Devon cattle:

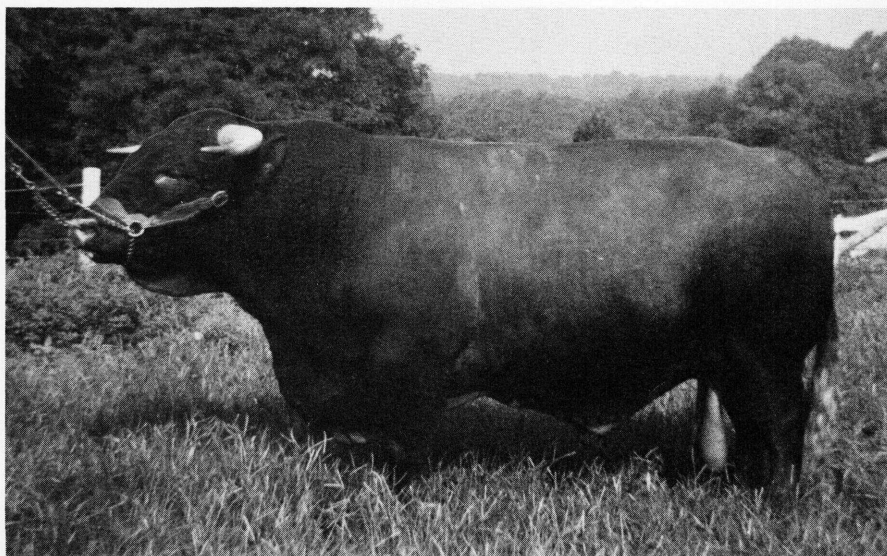
- Rich red (often called 'ruby red') coat of somewhat mossy hair.

- Yellow skin.



PN-3454

Chianina.



BN-30653

Devon.

- Creamy white, black-tipped, medium-size horns.

The Devon breed originated in Devonshire's grass-covered hills in southwestern England, a region famous for the high quality of its beef. Colonists brought Devon cattle to America as early as 1623, and for years "the old red cow" supplied the settlers milk, beef, ox teams, and leather.

A purebred hornless mutant is the basis for the breed's strain of registered polled Devons dating back to 1915.

Devon breeders are urged to use artificial insemination and weight-for-age progeny performance records to improve their cattle. The Devon breed's registry office registers female progeny of registered Devon bulls and grade beef brood cows in its "Qualified Registry."

In earlier years the Devon was sometimes used as a dual-purpose type, but for the past 20 years, emphasis and use has been as a beef breed.

Most of the Devon herds are in South Carolina, Louisiana, Mississippi, Oregon, Texas, and Maryland.

Galloway

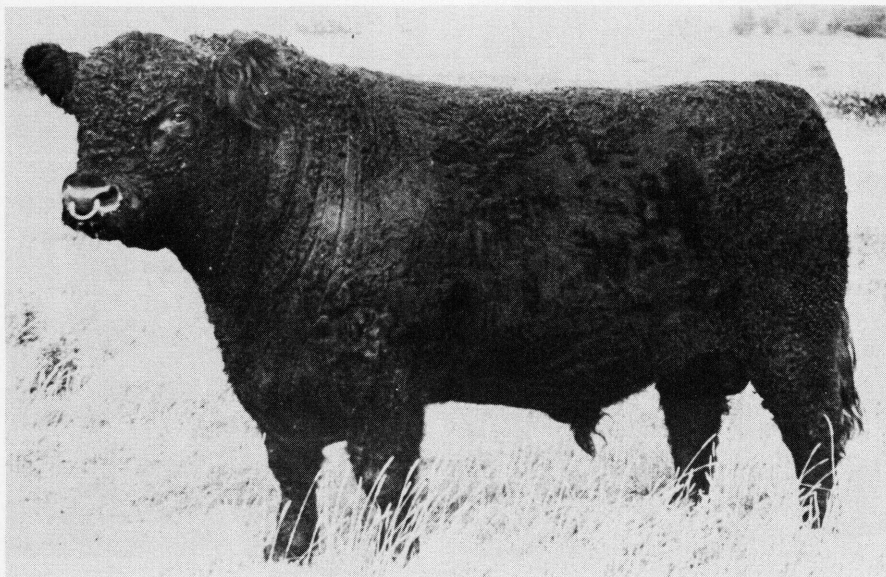
Characteristics of Galloway cattle:

- Black, long, soft wavy hair and thick, mossy undercoat.
- Polled.

The Galloway breed was developed in southwest Scotland where the climate is moist and chilly.

In general, the breed places great emphasis on hardiness, carcass quality, foraging ability, quick response to good feeding conditions, and on good coats, wide muzzles, and good feet and legs. The newborn calves are said to survive more severe weather conditions than those of most other breeds.

The breed was first imported into the United States in 1870. The number raised here has never been large but has been increasing in recent years.



BN-30654

Galloway.

Gelbvieh

Characteristics of Gelbvieh cattle:

- Single-colored varying from cream to reddish yellow.
- Medium weight and size.

This yellow alpine breed comes from four triple-purpose, yellow breeds—Glan-Donnersburg, Yellow Franconian, Limburg, and Lahn. These four breeds were developed around 1850 and were amalgamated into the Gelbvieh in 1920. Semen is now available in the U.S. and a breed association has been formed.

Hereford

Characteristics of Hereford cattle:

- White face, crest, dewlap, underline, and switch; white legs below the hocks and knees; red bodies.
- Medium-size horns.
- Docile nature and easily handled.

The Hereford breed originated in the County of Hereford in England, an area of plains and fertile valleys.

In 1817, Henry Clay, the statesman from Kentucky, imported the first Herefords. It was, however, the second importation of this breed in 1840 that provided for the establishment of Herefords in this country. Later in the 1870s, large numbers of cattle were imported, and the breed became very popular.

Herefords are considered to have superior foraging ability, vigor, and hardiness. They tend to produce more calves under rigorous conditions than many other breeds. These characteristics, along with their docile nature, probably account for this breed's popularity in the western part of the United States.

The distinctive white face and other white patterns of the Hereford tend to be dominant in crosses with all other

breeds. Modifying genes often reduce the amount of white in crosses as compared to purebreds; but, in almost all cases, crosses can be clearly identified as having a Hereford parent. This distinctive color pattern may have been a factor in establishing the breed's popularity.

The American Hereford Association has registered cattle since 1881. Nearly 16 million cattle are on its books, more than any other breed association. In 1970, the Association registered nearly a quarter of a million head.

Polled Hereford

The genealogy of present day Polled Herefords can be traced to the original parent Horned Hereford, imported from England.

This breed had its beginnings in 1900 when Warren Gammon, an Iowa cattleman, checked with nearly every Here-

ford breeder in the United States for available, naturally occurring, purebred polled animals. The following year, he purchased ten polled females and 4 polled bulls.

Through natural mutation the gene carrying the polled trait became dominant and these polled animals evolved. Subsequent mutants were also used in forming the breed. Crosses of horned Herefords with the polled type followed by selection of the polled descendants have been used to improve the polled type.

Mr. Gammon and others organized the American Polled Hereford Cattle Club in 1900. In 1911, this club combined with the National Polled Hereford Association to form the American Polled Hereford Breeders Association.

Since 1901, nearly 3 million Polled Herefords have been recorded by the American Polled Hereford Association.



PN-3455

Gelbvieh.



Hereford.

PN-3456

Seventy percent of this total have been recorded since 1960.

Limousin

Characteristics of Limousin cattle:

- Light yellow coat with lighter circles around the eyes and muzzle.
- Skin free of pigmentation.
- Horizontal then forward and upward spread of horns.

The Limousin breed originated in the province of Limousin in west-central France. The breed evolved as beef and work animals. The head is small, short, with a broad forehead. The neck is short and the withers are not pronounced. Calves average 75 to 85 pounds at birth. This breed was developed for "yard" fattening, and the carcass is considered

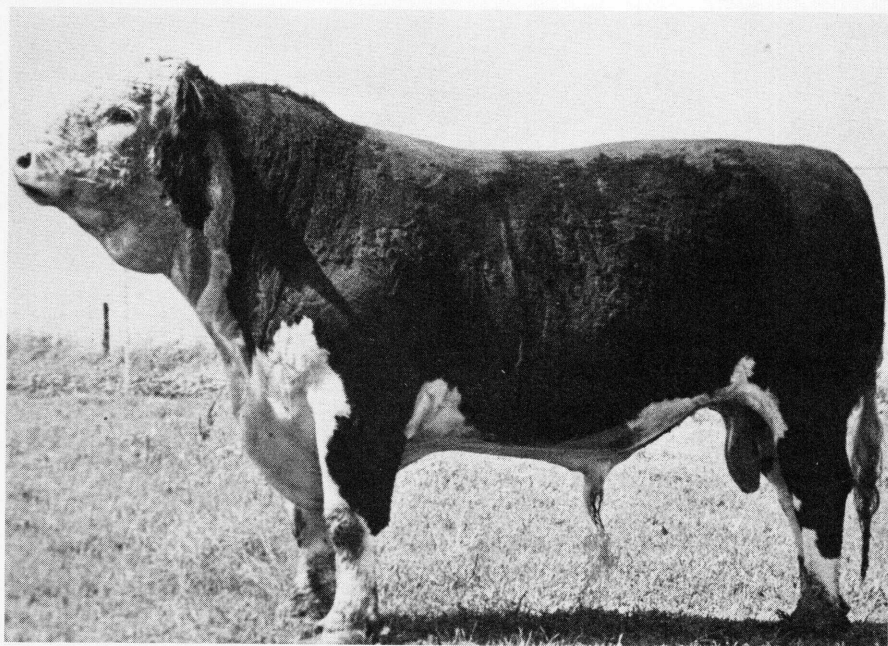
to be well balanced with good muscular development. The first semen of this breed was imported from Canada in 1968.

Maine-Anjou

Characteristics of Maine-Anjou cattle:

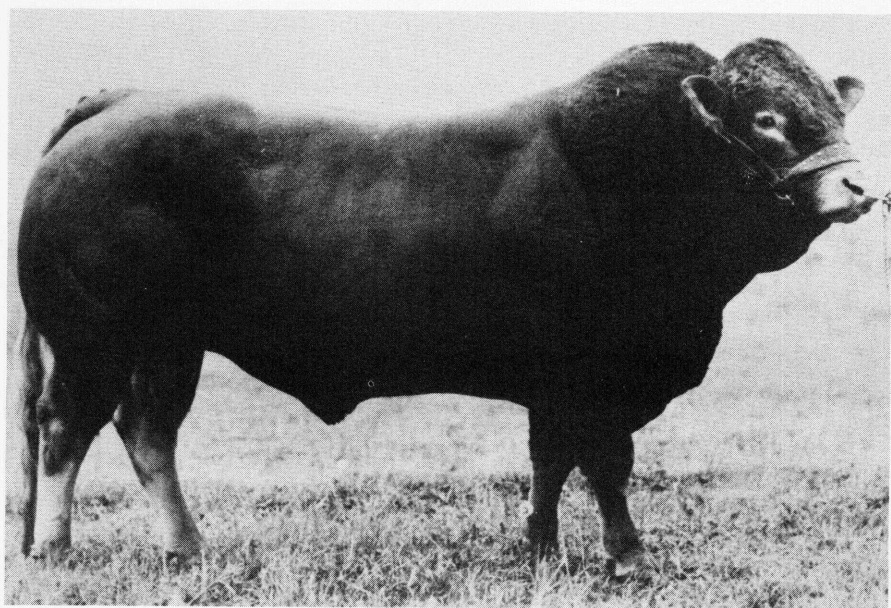
- Dark red and white in color (sometimes roan).
- Lightly pigmented skin.
- Medium-size horns which curve forward.
- Docile and easily handled.

The Maine-Anjou breed is the result of continued crossings since about 1830 between English Shorthorns and French Mancelle cows. In France, Maine-Anjou was bred and used for meat and milk



PN-3457

Polled Hereford.



PN-3458

Limousin.



PN-3459

Maine Anjou.

production. Average milk production for this breed is about 6,000 to 7,000 pounds per lactation, with a butterfat test of 4 percent.

Maine-Anjou are larger than any other French breed and although used for meat and milk, they are best developed as beef producers. They are noted for a fast growth rate and a well-marbled carcass. Maine-Anjou breeders have selected away from double-muscling animals. The incidence of twinning is estimated at 10 percent. The first semen was imported from Canada in early 1970.

Murray Grey

Characteristics of Murray Grey cattle:

- Solid-color coat that is dark to silver gray.
- Polled.
- Known as a docile breed.

Murray Grey originated in Australia around 1905. This breed is the product of Shorthorn-Angus crosses.

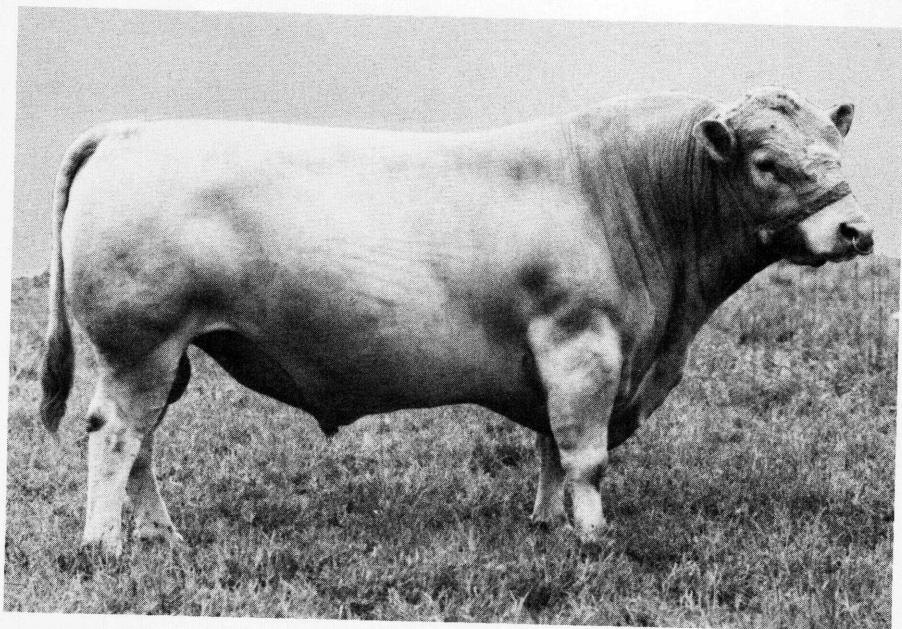
The Murray Grey Beef Cattle Society was formed in the United States in 1962. Registration is available to all females having not less than 7/8 Murray Grey breeding and to all bulls having not less than 15/16 Murray Grey breeding. Recording is available to both sexes having not less than 1/2 Murray Grey breeding.

Scotch Highland

Characteristics of Scotch Highland cattle:

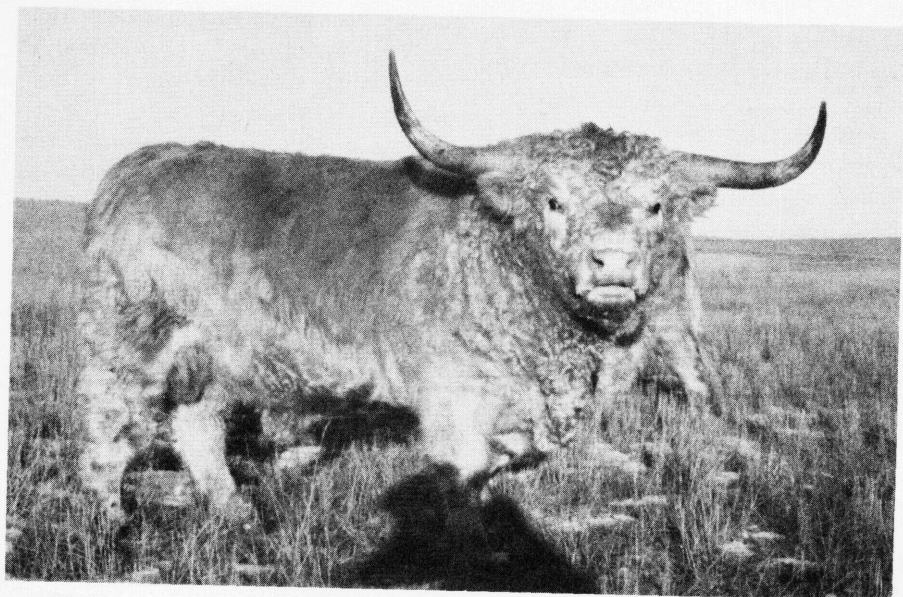
- Long, coarse outer hair with a soft thick undercoat.
- Black, brindle, red and light red, dun yellow, and silver coats.

The Scotch Highland breed of cattle, developed in the Hebrides Islands near



Murray Grey.

PN-3460



Scotch Highland.

BN-30657

the west coast of Scotland, is one of the oldest European breeds. A small number of these animals have been imported into the United States. The American Scotch Highland Breeders Association was organized in 1948.

Scotch Highland cattle are very hardy and exceptionally good foragers. They developed under rigorous climatic conditions and had scant feed supplies. Some ranchers in the northern plains of the United States cross Scotch Highland cattle with other breeds to infuse a greater winter hardiness in the offspring.

Shorthorns

Characteristics of Shorthorn cattle:

- Red, white, or roan.
- Short horns that are refined and generally incurving.
- Good temperament and easily handled.

The Shorthorn breed originated in the late 1700's in northeastern England, principally in the valley of the Tees River. This is a fertile area, and selection under good feed conditions may have contributed to the characteristics of modern Shorthorns.

The Coates Herd Book, established in 1822 to record pedigrees of Shorthorn cattle, was the first cattle herdbook. It served as a model for later herdbooks.

Shorthorns were bred originally for both meat and milk—dual-purpose animals. In earlier times the name “Durham” was often applied, but it is no longer used.

Shorthorns imported into the United States between 1820 and 1850 are responsible for establishing the breed on a permanent basis in this country. Importations of this breed date back much farther, however, to as early as 1783.

In the middle 1800's a Scottish breeder, Amos Cruickshank, and others, selected intensely within the existing Shorthorn breed for animals having increased compactness and thickness and the ability to mature and fatten at early ages. In time, this resulted in separation of the breed into distinct beef and milking types.

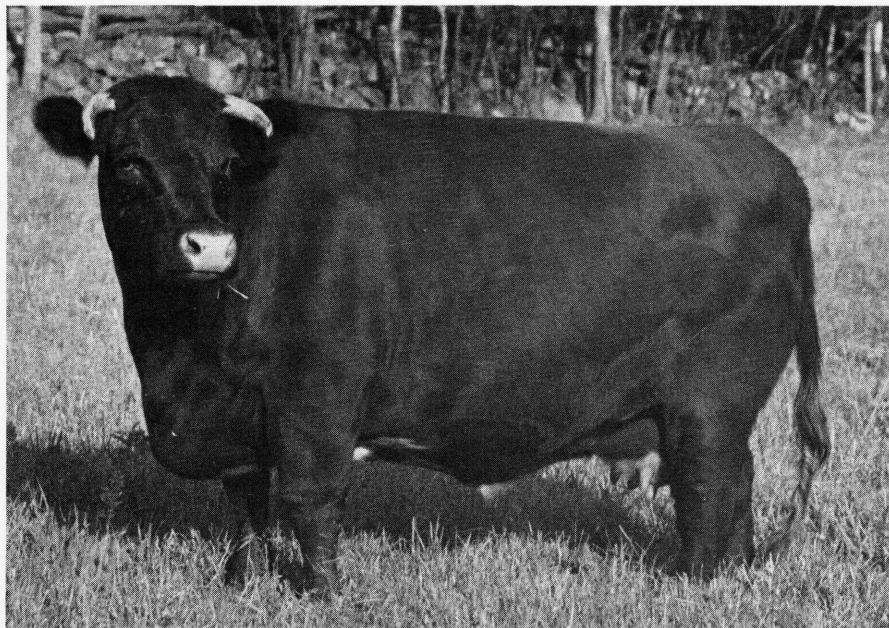
Scottish Shorthorns did not attain popularity in the United States until the last 2 decades of the 19th century. Beef type Shorthorns in this country today trace almost entirely to Scottish cattle in all lines of their pedigrees.

Since Shorthorns vary in color, coat color inheritance is of interest. With correct classification, mating red to red results in all red offspring; mating white to white gives all white offspring; mating red to white gives roan offspring; and intermating roans give red, roan, and white calves in an average proportion of 1:2:1.

Misclassification for color sometimes occurs because modifying genes affect the proportion of red and white hair in roan individuals. They can vary from almost red to almost white. This can lead to misclassification—as in classifying red a genetically roan individual with only a few white hairs. White markings on the underline, tail, and sometimes on the forehead, appear to be inherited independently of the basic color.

Both beef and dairy types are registered in the same herdbook in England and Scotland. This practice was followed in the United States until 1948, when the American Milking Shorthorn Society established its own herdbook.

The Milking Shorthorn breed is discussed under “Dual-Purpose and Dairy Breeds of Cattle”, page 28.



BN-30658

Shorthorn.

Polled Shorthorns

Except for horns, characteristics of Polled Shorthorns are the same as in horned Shorthorns.

In the late 1800's, polled cattle of predominantly Shorthorn breeding were developed by grading up to Shorthorns after crosses to native hornless, or "muley," cows. From 1890 to 1923, "single-standard" polled animals carrying a predominance of Shorthorn inheritance were eligible for registry. These cattle lost their popularity and have faded from the scene.

"Double-standard" Polled Shorthorn cattle are registered in the same herd-book as horned beef Shorthorns because their ancestry comes from registered Shorthorns. They originated from the descendants of a mutant polled cow, Oakwood Gwynne 4th.

Polled Shorthorn breeders have used crosses with horned cattle to improve

their breed while retaining the polled characteristic.

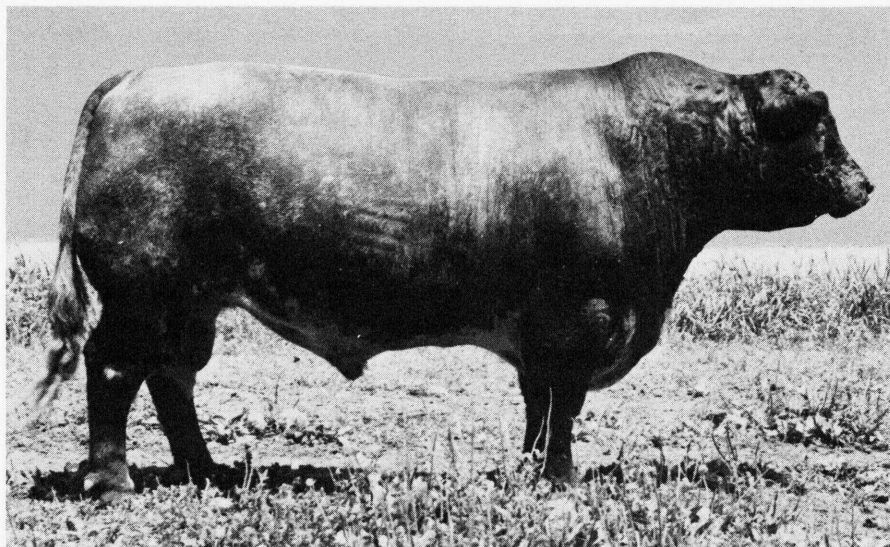
In recent years, over one-third of the beef Shorthorn registrations have been of the polled type.

Simmental

Characteristics of Simmental cattle:

- White to light-straw faces; red to dark red, spotted bodies.
- Medium-size horns.
- Large-bodied breed known for its docility.

During the Middle Ages, the Simmental breed evolved in the Simmen Valley of Switzerland. In 1806, the Simmental Herd Book was established in Switzerland, requiring a performance pedigree for milk and conformation. Recently, meat and carcass characteristics have been added to the performance pedigree.



PN-3461

Polled Shorthorn.

The ability of this breed to milk about 9,000 pounds per lactation with over 4 percent butterfat and to gain 3 pounds per day on forage has made the Simmental the most numerous breed of cattle in Europe. In France, this breed is called "Pie Rouge"; in Germany, it is called "Fleckvieh." From European exportations, this breed has been established in South Africa, South America, and the Mideast. The first Simmental entered the United States from Canada in May, 1969.

The American Simmental Association was founded in October, 1968. It maintains a herd book which is open to upgrading of beef and dairy stock. To be eligible for registration, all animals must have a performance pedigree.

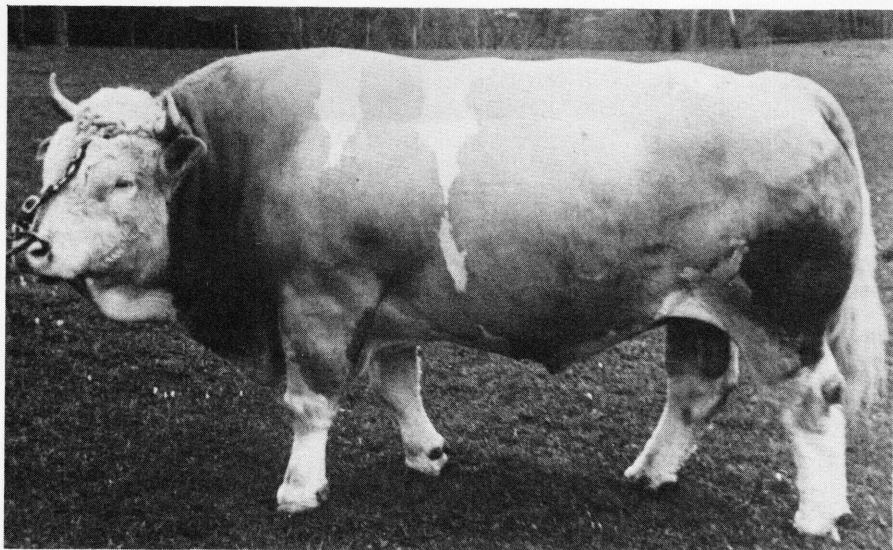
The ASA supports open, artificial insemination and has no color requirements. Purebred status will be obtained in three top crosses for heifers (7/8) and four top crosses for bulls (15/16).

South Devon

Characteristics of South Devon cattle:

- Dual-purpose "dam breed."
- Extremely docile.
- Rich medium-red coat that is lighter in the twist; soft and curly hair; exceptionally thick hide — loose and mellow.
- Medium-length head with medium-wide muzzle; eyes large and full; white, average-size horns that curve forward and slightly downward.
- Bulls 2,000-2,800 lbs. at maturity; cows approximately 1,500-1,600 lbs. at maturity.

The South Devon breed is reported to have existed in the southwest part of England for about 400 years. Although there are no authentic records of the origin of this breed, it is believed that this breed was derived, in part, from the large, red cattle of Normandy, France,



PN-3462

Simmental.



PN-3463

South Devon.

which were imported by England at the time of the Norman Invasions. In its country of origin, the South Devon is dual-purpose (beef type with milk records) and genetically divergent from the Devon breed (single purpose-beef). The similarity in name has caused some confusion between the two breeds.

Devons have been in North America since 1623, but the first importations of *South Devons* occurred in 1936 and 1947 (and involved only five animals). More recently, in 1969 and 1970, Big Beef Hybrids of Stillwater, Minn., imported 215 registered, pedigreed South

Devons from England for crossbreeding with traditional, domestic beef cows.

The South Devon is the only "dual-purpose" British breed under the British Milk Marketing Board Record Control, that produces 7,000 to 10,000 pounds of milk per 305-day lactation and also qualifies for the British beef subsidy. British tests show that the South Devon has a competitively rapid growth rate and consistently produces top quality carcasses.

South Devons are claimed to be long-lived with high fertility. When crossed with smaller breeds, calving difficulties are comparatively minimal.

BREEDS DEVELOPED IN NORTH AMERICA

The development of beef breeds in North America has all occurred in this century. The Brahman was developed by combining several breeds or strains of Zebu (*Bos indicus*) cattle of India. In all other cases, new breeds have been developed from Brahman-European crossbred foundations.

Brahman-European crossbreds have many production advantages, especially for conditions in the Southern United States. Maintaining a systematic crossbreeding system is difficult, especially in small herds. Most of the new breeds are based on Brahman-European crossbreds and have been developed with these objectives: (1) To create true-breeding types with the production advantages of the crossbreds, thus eliminating need for continuing crossbreeding; (2) to improve upon the crossbred type through selection for desired qualities not present in the foundation crossbreds. All animals in these breeds show some Brahman physical features, such as a

small hump, large ears, and pendulous skin on the throat and navel areas.

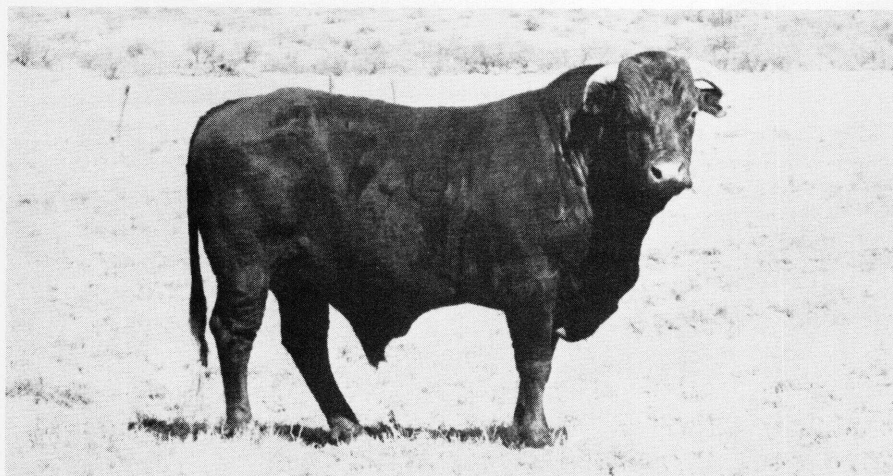
Barzona

Characteristics of Barzona cattle:

- Able to perform effectively on a grass-browse combination.
- Selected for use under drought conditions.
- Good mothers and milkers.
- Color: Nearly solid red (light cherry to mahogany), little white except on underline and occasionally around the head.

Barzona is a contraction of Bard and Arizona. Barzona cattle were developed by F. N. Bard for the inter-mountain desert areas of the Southwest and northern Mexico.

Development of Barzona cattle began in Arizona in 1942 with an Africander-Hereford cross. Females resulting from this cross were divided into two herds.



PN-3464

Barzona.

Santa Gertrudis bulls were used on one herd and Angus bulls on the other. Progeny were closely culled and cross-backed with emphasis on fertility, mothering ability, and gain ability.

The Bard herd was closed in 1960, sometime after the introduction of the Santa Gertrudis and Angus bulls. Records were maintained on weaning weights, pasture gains after weaning, beef-type conformation, and dams' productivity.

Cows produced by three top crosses of Barzona-registered bulls and from cows of beef herds are recognized as purebreds. A bull must be of the fourth generation of Barzona breeding to be eligible for registration.

The Barzona Breed Association of America was organized in 1968.

Beefmaster

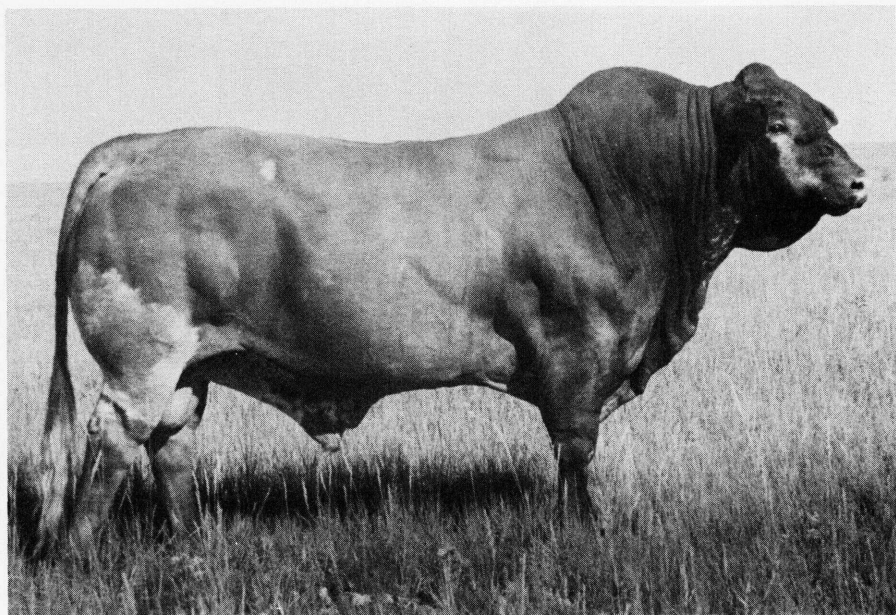
Characteristics of Beefmaster cattle:

- Color variable, with more reds and duns than other colors.
- Most are horned but polled individuals occur.

The development of the breed was begun in 1931 by Tom Lasater on a ranch near Falfurrias, Tex. The foundation herd of the breed was moved in 1949 to Matheson, Colo., where development continues.

Three breeds—the Hereford, the Shorthorn, and the Brahman—were combined to produce the Beefmaster. In the initial crosses, Mr. Lasater used both the registered Hereford herd and the Brahman herd, which had been developed by his father, Edward C. Lasater, who began his work with Brahman cattle in 1908. The foundation herd has been closed since the purchase of a few registered Shorthorn sires during the 1930's.

The majority of the crossbreeding was carried on in multiple sire herds under range conditions; hence, the exact percentage of blood of each of the parent breeds is not known. It is estimated that about 25 percent Hereford, 25 percent Shorthorn, and 50 percent Brahman hereditary material was incorporated into the breed.



PN-3465

Beefmaster.

During the entire period of breed development, selection has been practiced for disposition, fertility, weight, conformation, hardiness, and milk production. No planned selection for coat color has ever been made. However, there has been an apparent increase in the frequency of red.

There are now two breed associations—Beefmaster Breeders Universal in San Antonio, Tex., and Foundation Beefmaster Association in Denver, Colo. Beefmasters are cattle that are purebred descendants of the foundation herd (Lasater Beefmasters) or are produced by three consecutive topcrosses of recognized Beefmaster breeding. No distinction is made between artificial insemination and natural service.

In order that each Beefmaster may be permanently identified with the breeder, a prefix name such as "Jones

Beefmasters," "Smith Beefmasters," etc., is used to designate his cattle. Thus, in a unique way, the responsibility for the continued improvement of the breed is placed squarely upon the individual breeder.

Braford

Characteristics of Braford cattle reflect those of the parent breeds.

The Braford developed from crossing Brahman and Hereford breeds. Braford cattle are approximately $\frac{3}{8}$ Brahman and $\frac{5}{8}$ Hereford.

The purpose of the recently established International Braford Association is to continue to improve the characteristics of the breed for vigor, size, milking ability, rumen capacity, and growth rate by selective line-breeding. Emphasis will be given to environmental adaptability and forage utilization.

Brahman

Characteristics of Brahman cattle:

- Distinctive appearance, a hump over shoulders, loose skin (dewlap) under throat, and large drooping ears.

- Color light gray or red to almost black; prevailing color, light to medium gray.

The Brahman breed was developed in the Southern United States in the early 1900's from humped cattle of India (*Bos indicus*) often referred to as Zebu.

Zebus were initially imported in 1849, but the first importation of importance in the development of the Brahman breed was made by the Pierce Ranch, Pierce, Tex., and T. M. O'Connor, Victoria, Tex., in 1906. Additional importations were made in 1924, 1925, and 1946.

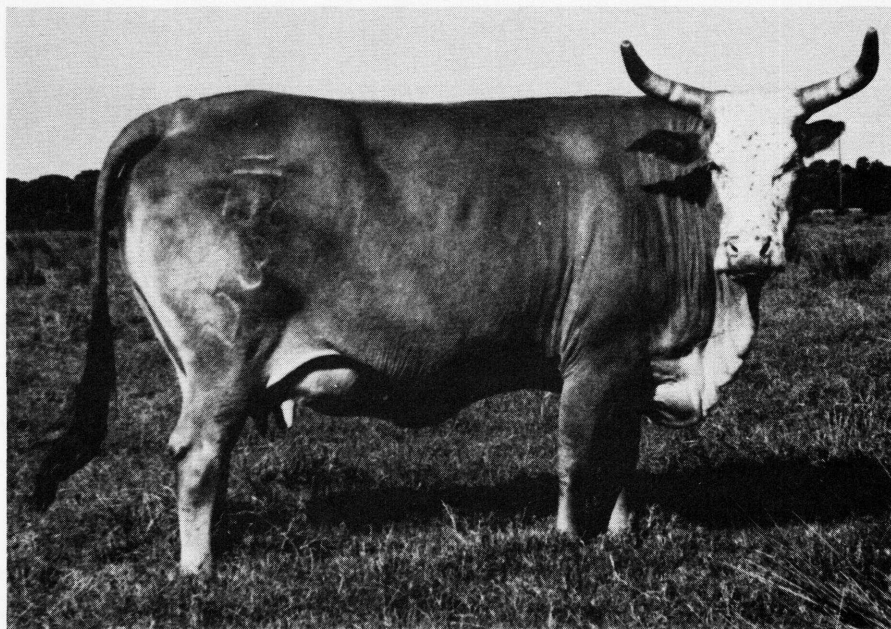
Cattlemen in the United States developed the Brahman by combining several Indian breeds or strains and upgrading

on British breed females. This was coupled with selection for beef conformation and early maturity. The name "Brahman" was chosen by the American Brahman Breeders Association organized in 1924.

Environmental adaptation, longevity, and mothering ability are the Brahman's strongest traits.

This breed is making its greatest contribution to beef production in the United States through crossing. Brahman-European crosses have long been observed to have distinct production advantages, especially under Southern conditions. They exhibit a great deal of heterosis or "hybrid vigor" and often considerably exceed both parental types in growth rate and reproduction.

Under Southern conditions, first-cross Brahman-European cows in virtually all research have weaned substantially heavier calves than have cows of



Braford.

PN-3466

either parent breed. Brahman hybrids have performed as well in some feedlot trials during winter months as animals of the British breeds; under summer grazing and feedlot conditions, they have consistently outgained British types.

Brahmans enjoy an extensive export market. They have been shipped to 58 countries.

Brangus

Characteristics of Brangus cattle:

- Black in color.
- Polled.

The Brangus breed was developed by blending the Brahman and Angus breeds. The cattle are a type based on foundation stock of 3/8 Brahman and 5/8 Angus. Animals recognized as Brangus can be produced by (1) breeding an animal having 1/4 Brahman ancestry and 3/4 Angus ancestry with an animal that is 1/2 Brahman and 1/2

Angus, (2) breeding an animal having 3/4 Brahman ancestry and 1/4 Angus ancestry to a purebred Angus, or (3) inter-mating Brangus individuals.

Brangus is a registered trade name and can be applied only to cattle registered with the International Brangus Breeders Association. Fifty-four breeders founded the association in Vinita, Okla., in 1949. Only Brangus cattle are registered in the permanent registry of the Association.

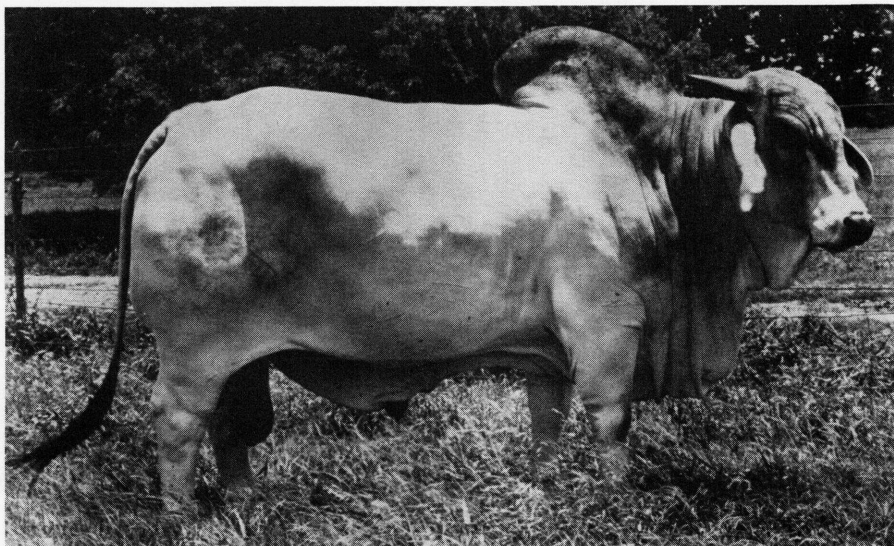
All cattle to be registered as Brangus or enrolled as foundation stock are inspected by an Association appraisal committee.

The Brangus breed is black and polled—both inherited dominant qualities.

Red Brangus

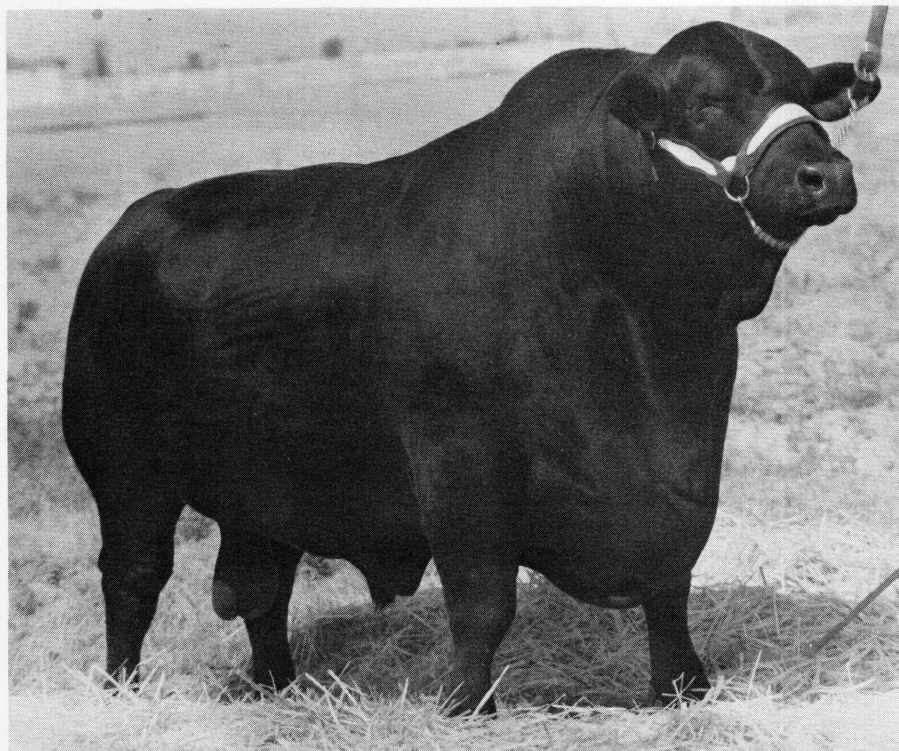
Characteristics of Red Brangus cattle:

- Red in color:
- Polled.



PN-3467

Brahman.



BN-30662

Brangus.

The Red Brangus breed is based on a combination of purebred Angus and Brahman ancestry. Although no percentages are specified, animals in general must show evidence of both parental breeds, they must be red and polled, and they must meet size and conformation requirements. Animals qualified in other respects, but appearing to have predominantly Angus or Brahman ancestry, are put in a special section known as "certified" Red Brangus. Their off-spring are eligible for registration if they qualify as outlined above.

Development of the breed began in 1946 on the Paleface Ranch, Spicewood, Tex. The American Red Brangus Association was organized in 1956.

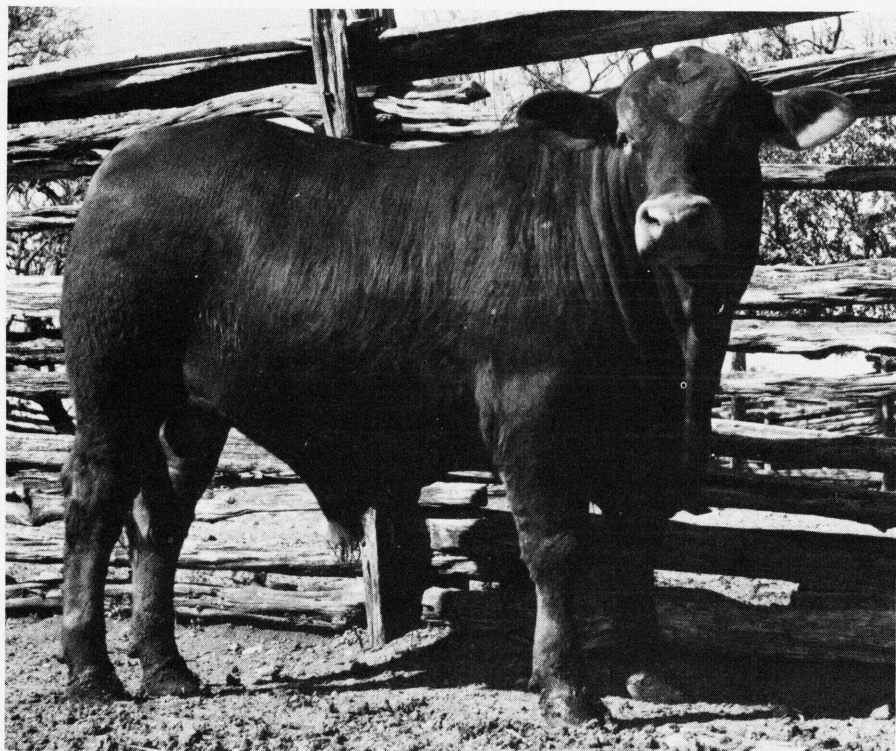
Charbray

Characteristics of Charbray cattle:

- White to cream in color.
- Horned.

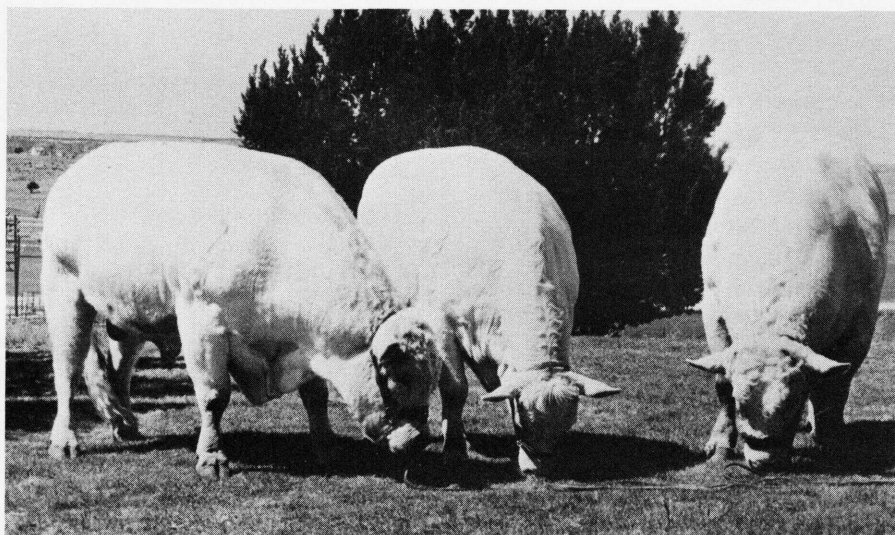
The Charbray developed from crossing the Charolais and Brahman breeds.

The American Charbray Breeders Association, formed in 1949, was merged with the American-International Charolais Association in 1967. The Charbray breed is maintained as a separate record within the framework of the AICA. To qualify for registration, animals must have at least 1/16 and not more than 1/4 Brahman ancestry; the remaining percentage must be Charolais.



BN-30663

Red Brangus.



BN-30664

Charbray.

The Charbray is used both as a breed in its own right and as a step in the process of grading up to Charolais. Charbray bulls are often used for crossing with other breeds in commercial production.

Hays Converter

The Hays Converter is a three-breed cross, developed by Senator Harry Hays of Calgary, Alberta, Canada. Five generations of closed herd development were utilized to develop this strain of cattle from Hereford, Holstein, and Brown Swiss stock.

Criteria for selection of foundation animals were large, strong frame, well-attached udder, sound feet and legs, winter hardiness, rate of gain, and ease of calving.

Calves are expected to grow into heavy market animals within 12 to 15 months.

Santa Gertrudis

Characteristics of Santa Gertrudis cattle:

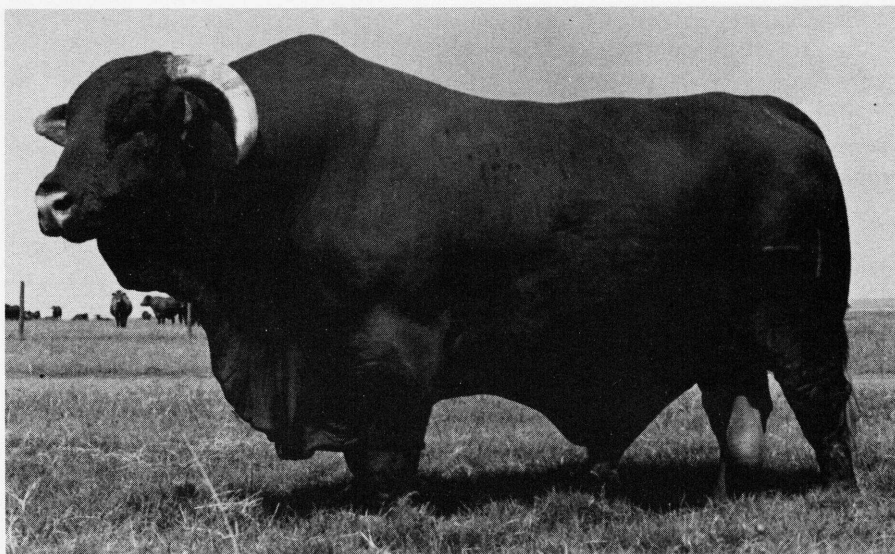
- Cherry red in color.
- Majority are horned, but polled individuals occur and are acceptable.
- Loose hides, with surface area increased by neck folds and sheath or navel flap.
- Hair short and straight in warm climates; long in cold climates.

The Santa Gertrudis breed of cattle was developed by Robert J. Kleberg, Jr., president, King Ranch, south Texas, from crosses between beef type short-horn cows and Brahman bulls. Cross-breeding between these breeds of different species (*Bos taurus* and *Bos indicus*) started in 1910. At first, bulls with varying percentages of Brahman ancestry were crossed with cows of British breeds. These crosses showed promise,



Hays Converter.

PN-3468



Santa Gertrudis.

BN-30665

and in 1918 the formation of a new breed was initiated.

In 1920, a bull calf of $3/8$ Brahman and $5/8$ Shorthorn ancestry, with many of the desired qualities, was born and named Monkey. He proved to be an outstanding prepotent sire and, before his death in 1932, had produced more than 150 useful sons. He became the foundation sire of the breed and all Santa Gertrudis cattle are descended from him.

The breed has been widely distributed in the United States, particularly in

the South, and has been exported to 52 other countries.

The Santa Gertrudis Breeders International was organized in 1951.

Only bulls from the King Ranch have been sold. Thus, all Santa Gertrudis cattle owned by other breeders are the result of grading up to purebred bulls. To be certified as a purebred Santa Gertrudis, an animal must represent at least four topcrosses of Santa Gertrudis, and it must be inspected by a classifier from the breed association. Individual pedigrees are not required for certification, since multiple-sire breeding units are used in many herds.

DUAL-PURPOSE AND DAIRY BREEDS OF CATTLE

Dual-purpose cattle are intermediate in type. This means the animals have reasonably good beef conformation, and they are also capable of producing milk and butterfat in reasonable quantities.

Some breeders stress beef qualities; others stress milk production. For this reason, the dual-purpose breeds are not as uniform in type as the strictly dairy breeds or strictly beef breeds.

With the dairy breeds, the primary basis for selection is milk production. At the same time, however, selection is not against rapid growth and carcass quality. Some dairy breeds, therefore, can be successfully utilized for beef production.

Milking Shorthorn

The Milking Shorthorn is the same as the beef type Shorthorn in color and horns, but it is more angular and less thickly fleshed. (See page 29.)

The primary objective of breeders of this Shorthorn type is to develop cattle that will produce large quantities of milk and steer calves that gain rapidly and yield acceptable beef.

In selection, greater emphasis is placed on the milking qualities.

Increased milk production comes from cattle with increased scale. This same increase in milk and scale produces more beef. Such combination meets the needs of the commercial beef producer.

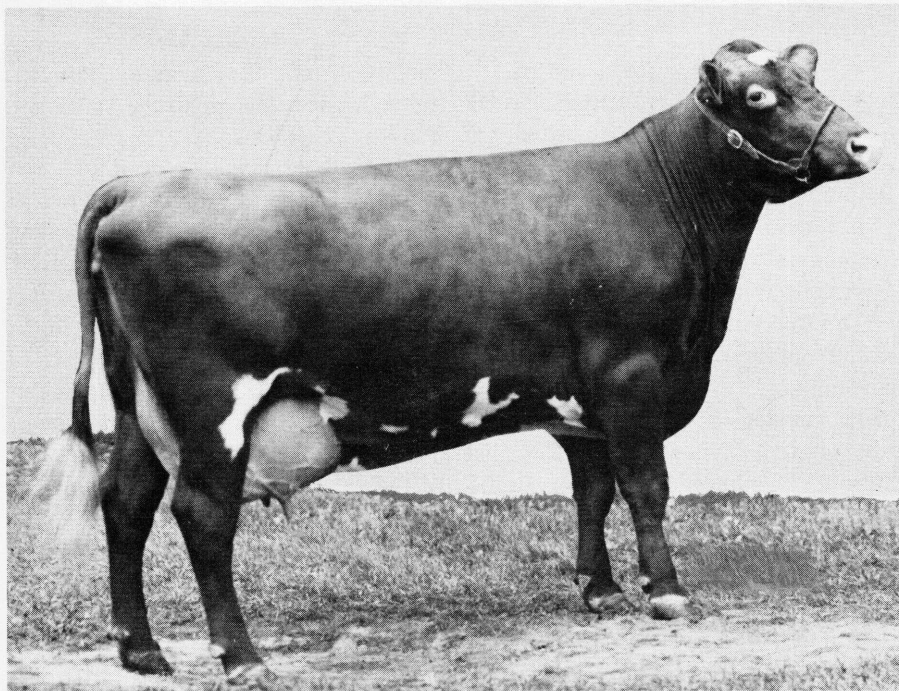
While this breed was developed as a dual-purpose breed, individual breeders have excelled in both milk and beef production.

Horned Milking Shorthorns are more numerous than polled.

Red Poll

Characteristics of Red Poll cattle:

- Light red to very dark red in color. (For many years a deep, rich cherry or ruby red was officially preferred, but currently any shade of red is acceptable as long as it does not approach fawn or yellow.)



PN-3469

Milking Shorthorn.



BN-30667

Red Poll.

- Natural white in the tail switch.
 - Skin usually buff or flesh-colored.
- Cattle with solid black, bluish, or cloudy noses are not eligible for registration.

- Natural white permissible in limited amounts on the underline.
- Polled.

The Red Poll breed originated in the eastern coastal area of England from crossing—and, eventually, nearly complete merging—of the ancient inbred stocks of the shires of Norfolk and Suffolk. This began in the early 1800's and was substantially complete by 1846, when the breed was recognized by the Royal Agricultural Society. The first registered, pedigreed Red Polls were imported to the United States in 1873 by G. F. Taber of New York. By 1900 Taber and others had imported well over 300 head. The breed spread

rapidly from the eastern seaboard, through the Midwest, to the Plains and the west coast.

The Red Poll Herd Book was founded in 1873 by Henry F. Euren at the invitation and with the cooperation of the county breed societies in England. He published it in 1874 as a private enterprise. The Red Poll Herd Book, American Series, is a continuation of the original. The Red Poll Cattle Club of America was organized in 1883, 5 years before the formation of the Red Poll Cattle Society of Great Britain and Ireland.

The breed is dual-purpose in heredity and has been so documented for at least 165 years. It yields carcasses that are high in proportion of lean (loin eye muscles are large), low in outer fat covering when finished, and that have acceptable marbling in the meat.

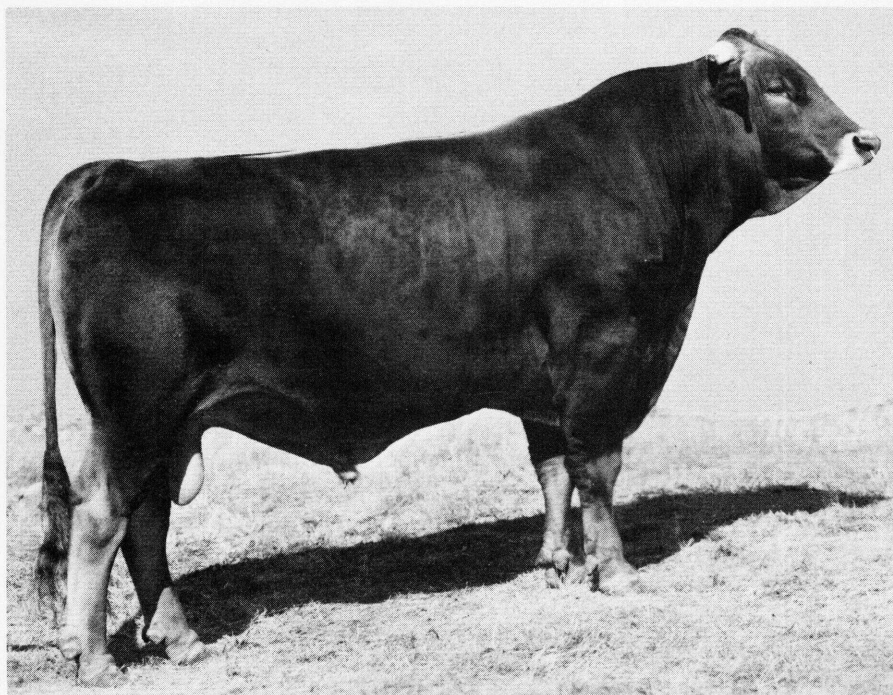
Some Red Poll herds have long been managed as beef cattle in typical cow-calf herds. The mothering ability of the cows is such that creep feeding is seldom necessary. With increasing specialization in the dairy business, small-farm dairy herds have been greatly reduced in recent years. This has resulted in increased emphasis on cow-calf operations in the Red Poll breed. In 1964, about 64 percent of registrations came from such cow-calf herds, maintained primarily for beef production. A strain with moderately high milk production has also been preserved.

The Red Poll breeders organized an Advanced Registry for recording milk and butterfat production in 1908—one of the earliest programs of this kind in the American cattle industry. In 1960, a Gain Register was added for recognizing

preweaning calf gain records. Then in 1963, the breeders added a Carcass Register for recording carcass merit and gain up to slaughter age—in terms of the amount of qualified carcass produced per day of age.

Brown Swiss

The Brown Swiss breed is one of the oldest of all recognized dairy breeds. Originating in Switzerland, Brown Swiss were first imported into this country in the winter of 1869. At that time, Brown Swiss were known as dual-purpose cattle. Pioneer breeders noted the great genetic potential for milk production in the "Big Brown Cow," and beginning in 1907, they sought to improve her as a dairy cow.



PN-3470

Brown Swiss.

While selecting for milk production, many of the original characteristics including size, ruggedness, strong sound feet and legs that wear, quality udders that last, thriftiness, and gainability were maintained and improved.

Research stations and ranchers have found that the use of Brown Swiss dairy bulls on all types of commercial beef cows give these cows heavier weaning weights, better feedlot performance, and valuable carcasses. They also found that one of the greatest benefits came from using the F₁ Brown Swiss and beef-type heifers for herd replacements. These have more milk for their calves, mothering ability, fertility, and calve with ease. Their well-shaped, quality udders with uniform teat placement give few problems of spoilage.

Brown Swiss are solid brown in color, varying from light to dark. They are long-lived cattle with a docile temperament. The minimum weight for

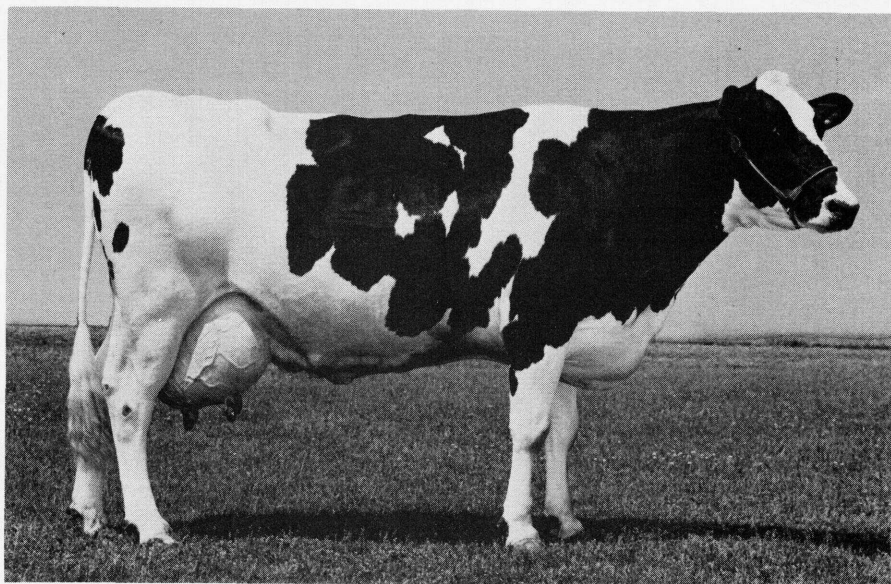
mature cows should be around 1,500 pounds; mature bulls should weigh over a ton.

Holstein-Friesian

Characteristics of Holstein cattle:

- Excellent mothering ability.
- High milk yield.
- Noted for rapid, efficient growth in the feedlot.
- Lean with little fat cover.
- Docile females.
- Color: black and white, or red and white spotted.
- Small horns.

The Holstein-Friesian breed had its beginnings in the Kingdom of the Netherlands. It is generally accepted that the Friesians and Batavians brought their cattle with them when they settled in the fertile lowlands of the Rhine delta, at or before the beginning of the Christian era.



PN-3471

Holstein-Friesian.

The intermingling of their cattle finally evolved a black and white breed which, on the lush pastures of the region, developed size and producing ability that gained them increasing fame and recognition as civilization advanced.

Dutch settlers in New Amsterdam (New York) probably brought the first animals of this breed to American shores about 1621, but as the breeding of these animals was not kept pure, they had no influence on the later development of America's dairy herds.

The real beginnings of this breed in America date back to about 1861. Winthrop W. Chenery of Belmont, Mass., became interested in this breed and purchased a cow from a Dutch sailing master in 1852. He made two later importations, in 1857 and in 1859. Except for one bull, all of these were lost because of an outbreak of pleuropneumonia in 1860. The Commonwealth of Massachusetts ordered the animals slaughtered. Chenery, however, was convinced of the superiority of this breed, and made an additional importation of a bull and five cows in 1861.

This importation was successful and the fame of their production spread. In 1869, others began to import this breed.

The first herd book of the breed was published in 1872. In 1880, this was incorporated as the Holstein Breeders Association of America.

In 1877, the Dutch Friesian Association of America was formed by another group of breeders, who felt that the name of Holstein, chosen by Mr. Chenery, was not the correct designation. The two groups merged in 1885 to form the Holstein-Friesian Association of America, which is now the world's largest dairy cattle registry.

The goal of this Association is to breed a more efficient dairy cow. In the process of achieving this, an animal has evolved that also possesses outstanding qualities of efficiency in the feedlot.

Dairy beef is becoming an increasingly popular source of supplementary income for cattle feeders as well as for dairymen. Holsteins compare favorably with beef breeds on rate of gain and lean production in the feedlot.

CATTLE RECORD ASSOCIATIONS

Beef Cattle

American ANGUS Association

3201 Frederick Boulevard
St. Joseph, Mo. 64501

RED ANGUS Association of America

P.O. Box 776
Denton, Tex. 76201

BARZONA Breed Association of America

P.O. Box 1421
Carefree, Ariz. 85331

BEEFMASTER Breeders Universal

County Court #2, Court House
San Antonio, Tex. 78206

Foundation BEEFMASTER Association	201 Wyandot St. Denver, Colo. 80223
International BRAFORD Association	Route 3, Box 490-U Fort Pierce, Fla. 33450
American BRAHMAN Breeders Association	1313 La Concha Lane Houston, Tex. 77054
International BRANGUS Breeders Assn.	9500 Tioga Drive San Antonio, Tex. 78230
American RED BRANGUS Association	404 Colorado Austin, Tex. 78701
American International CHAROLAIS Assn. ¹	1610 Old Spanish Trail Houston, Tex. 77025
American CHIANINA Association	P. O. Box 11537 Kansas City, Mo. 64138
DEVON Cattle Association	P.O. Box 628 Uvalde, Tex. 78801
American GALLOWAY Breeders Association	c/o Denver Stockyard Denver, Colo. 80202
American GELBVIEH Association	Rt.# 1, Box 126 Newkirk, Okla. 74647
Prairie Animal Breeding Enterprises, Ltd. (HAYS CONVERTER)	10436 81st Avenue Edmonton 60, Alberta, Canada
American HEREFORD Association	715 Hereford Drive Kansas City, Mo. 64105
American POLLED HEREFORD Association	4700 East 63rd Street Kansas City, Mo. 64130

¹The former American Charbray Breeders Association merged in 1967 with the American-International Charolais Association.

North American LIMOUSIN Foundation	309 Livestock Exchange Bldg. Denver, Colo. 80202
International MAINE-ANJOU Association	Box 5636 Kansas City, Mo. 64102
American MURRAY GREY Association	4700 E. 63rd Street Kansas City, Mo. 64130
SANTA GERTRUDIS Breeders International	P. O. Box 1257 Kingsville, Tex. 78363
American SCOTCH HIGHLAND Breeders Assn.	P. O. Box 146 Edgemont, S. Dak. 57735
American SHORTHORN Association	8288 Hascall Street Omaha, Nebr. 68124
American SIMMENTAL Association	P. O. Box 24 Bozeman, Mont. 59715
Big Beef Hybrids International Co. (SOUTH DEVON)	P. O. Box 248 Stillwater, Minn. 55082

Dual-Purpose and Dairy Cattle

The BROWN SWISS Cattle Breeders Assn.	800 Pleasant Street Beloit, Wis. 53511
HOLSTEIN-FRIESIAN Assn. of America	P.O. Box 808 Brattleboro, Vt. 05301
American MILKING SHORTHORN Society	313 South Glenstone Avenue Springfield, Mo. 65802
RED POLL Cattle Club of America	3275 Holdrege Street Lincoln, Nebr. 68503

MORE INFORMATION

Information helpful in raising beef and dairy cattle is given in the publications listed below. Copies of these publications may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402, or from any U.S. Government Printing Office bookstore across the country. Write to Superintendent of Documents for price information. Be sure to include your return address and ZIP Code.

Feedlot and Ranch Equipment for Beef Cattle	FB 1584
Foundations for Farm Buildings	FB 1869
Beef Cattle—Dehorning, Castrating, Branding, and Marking	FB 2141
Roofing Farm Buildings	FB 2170
Finishing Beef Cattle	FB 2196
Raising Livestock on Small Farms	FB 2224
Fences for the Farm and Rural Home	FB 2247
What You Can Do About Bovine Mastitis	FB 2253
Beef Cattle Breeding	AIB 286

A number of breed associations also have excellent publications available upon request. See the previous chapter for a listing of these associations.

Inclusion of a breed should not be interpreted as official recognition of the breed by the U.S. Department of Agriculture. Descriptions are included only for breeds having a breed association or society.

Many photographs in this bulletin have been supplied by cattle record associations.